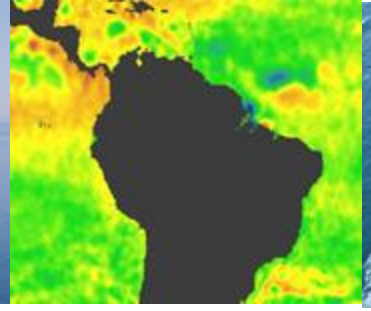
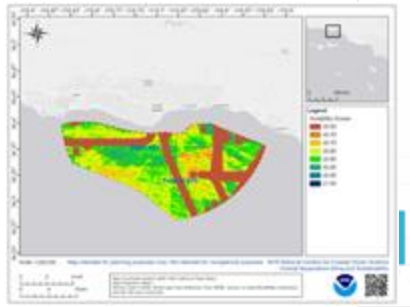
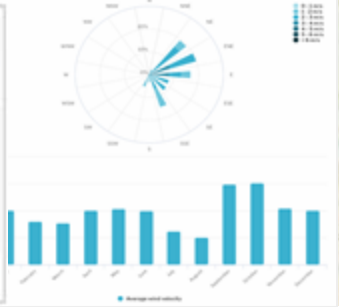
BOEM BUREAU OF OCEAN ENERGY MANAGEMENT

Known Resource and Use Concerns – Potential Solutions and Opportunities Discussion

Central Atlantic Intergovernmental Task Force Meeting
September 11, 2024


Ocean spatial modeling for siting of wind energy: How NOAA is providing Marine Spatial Planning support

NCCOS Spatial Planning Team
Dr. James A. Morris, Jr.

(Presented by Seth Theuerkauf, BOEM)

NCCOS | NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

NOAA BOEM MSP Partnership

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Home / News & Features

NOAA and BOEM announce interagency collaboration to advance offshore wind energy

HOME | NEWSROOM

BOEM Enhances its Processes to Identify Future Offshore Wind Energy Areas

New Changes in Response to Public Input

09/16/2022

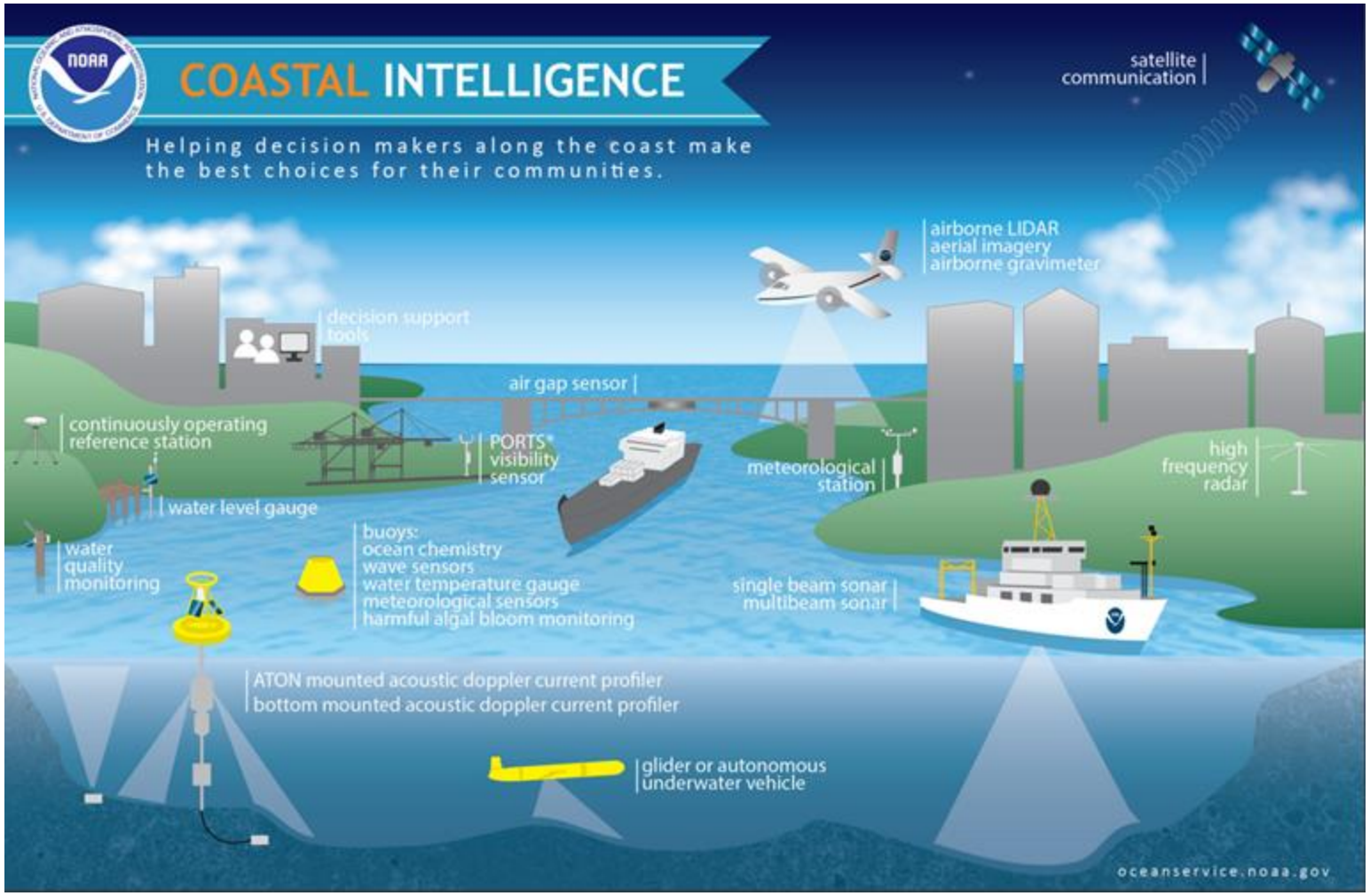
BOEM
Bureau of Ocean Energy Management

PERMITTING DASHBOARD
FEDERAL INFRASTRUCTURE PROJECTS

BOEM
Bureau of Ocean Energy Management

U.S. Department of Energy
arpa·e
CHANGING WHAT'S POSSIBLE

NOAA Leads the Nation on Ocean Intel

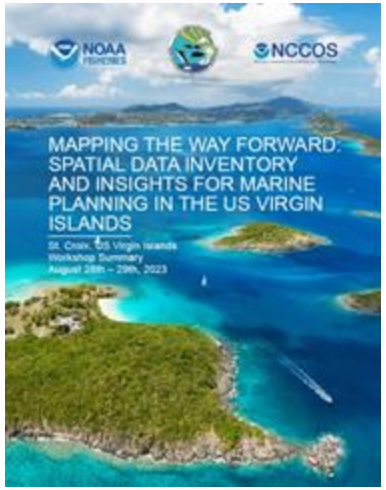


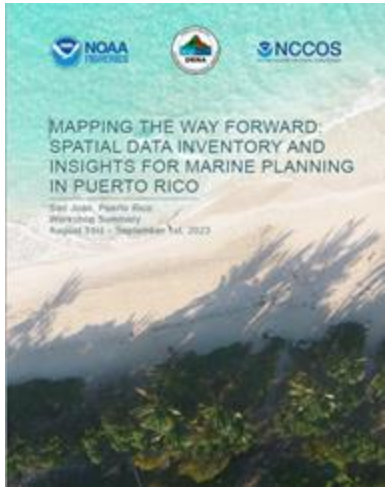
Ocean Industries

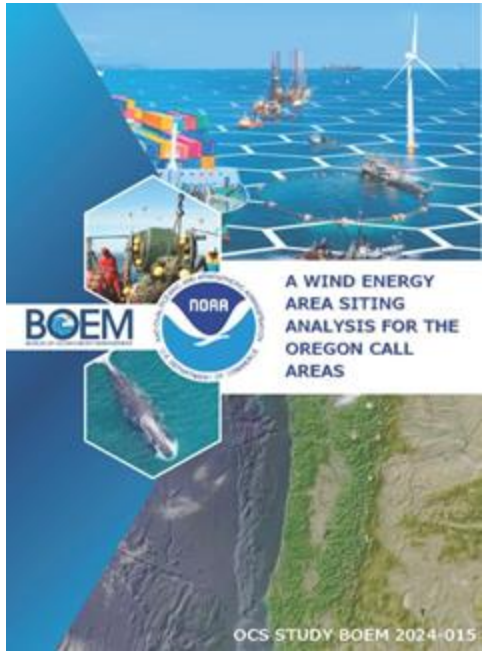
- Tourism and Recreation
- Defense and Public Administration
- Offshore Oil and Gas
- Transportation
- Fisheries and other Bio-products
- Shipbuilding
- Power Generation
- Construction
- Research and Education
- Professional and Business Services*

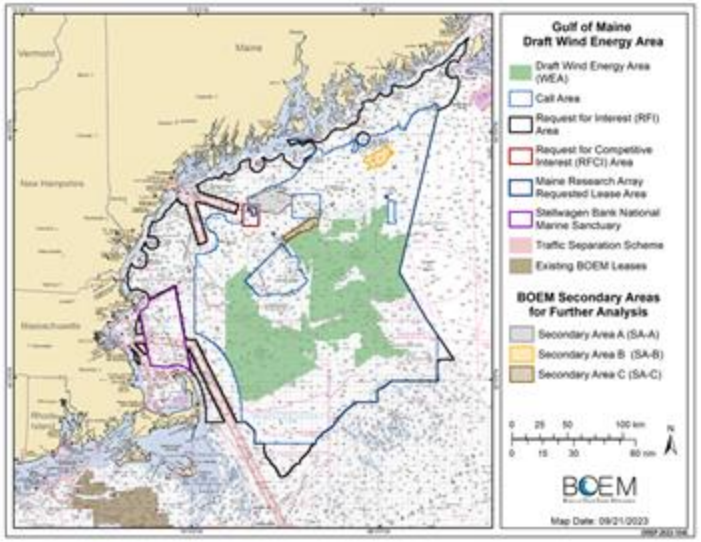
NOAA Spatial Planning

- Facilitation of the MSP process
- Completed 50+ analyses in last 5 years
- Identified Aquaculture Opportunity Areas
- Identified Wind Energy Areas
- State-designated aquaculture use areas
- Spatial planning for Ports/Harbors
- Tool/app development
- Stakeholder engagement



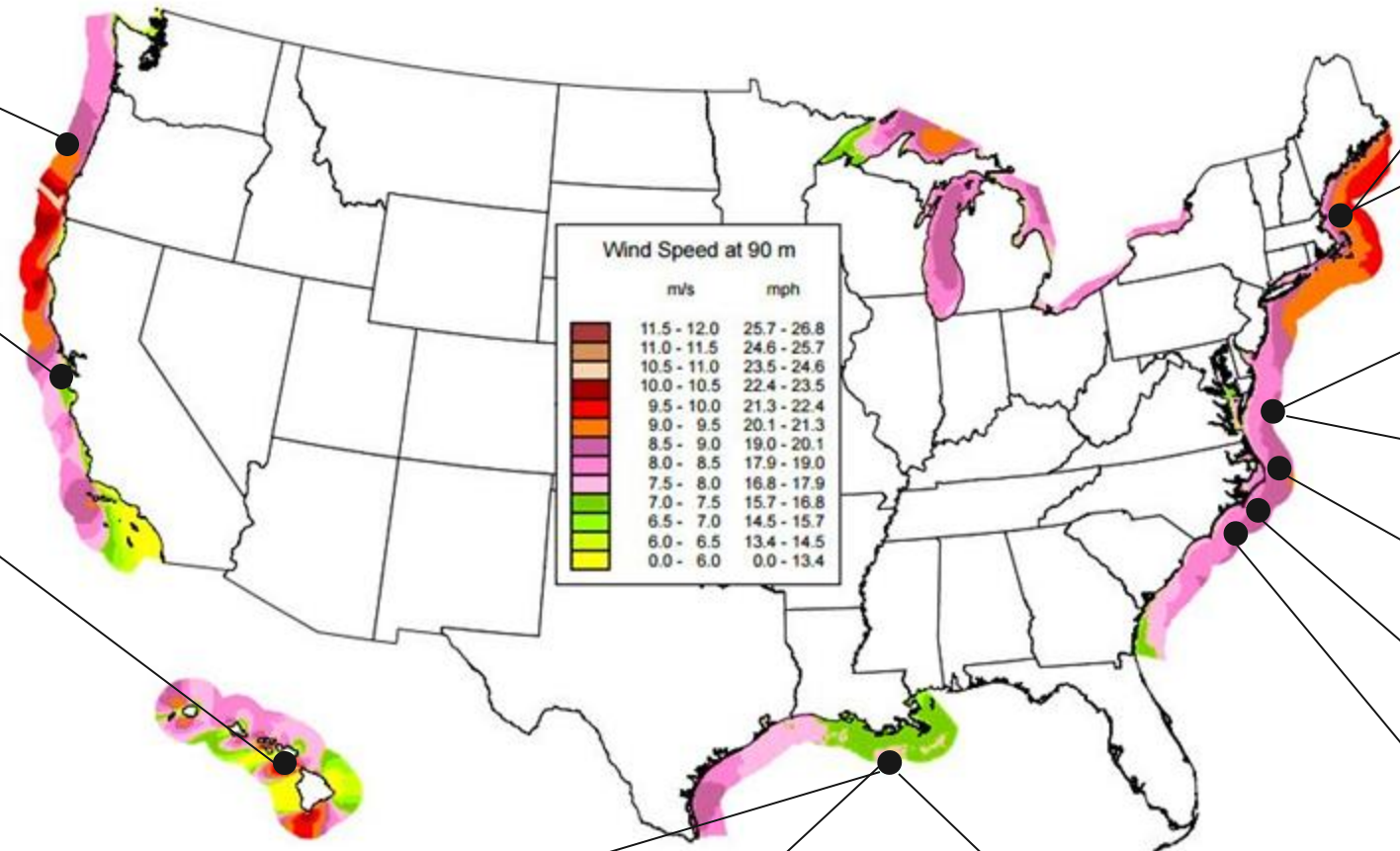






NOAA BOEM Spatial Planning

United States - Annual Average Offshore Wind Speed at 90 m



Oregon
Wind energy area siting
Lease siting
Cable siting

California #2
Call area siting
Wind energy area siting
Lease siting
Cable siting

Hawaii
Call area siting
Wind energy area siting
Lease siting
Cable siting

Guam
Call area siting
Wind energy area siting
Lease siting
Cable siting

Gulf of Maine
Call area siting
Wind energy area siting
Lease siting
Cable siting

Stellwagen Bank NMS
Cable corridors

Central Atlantic 1
Wind energy area siting
Lease siting
Cable siting

Central Atlantic 2
Call area siting
Wind energy area siting
Cable siting

Kitty Hawk
Cable siting

Cape Lookout NPS
Cape Hatteras NPS
Cable corridors

Carolina Long Bay
Cable siting

Gulf of Mexico 1
Wind energy area siting
Lease siting
Cable siting

Gulf of Mexico 2
Wind energy area siting
Lease siting
Cable siting

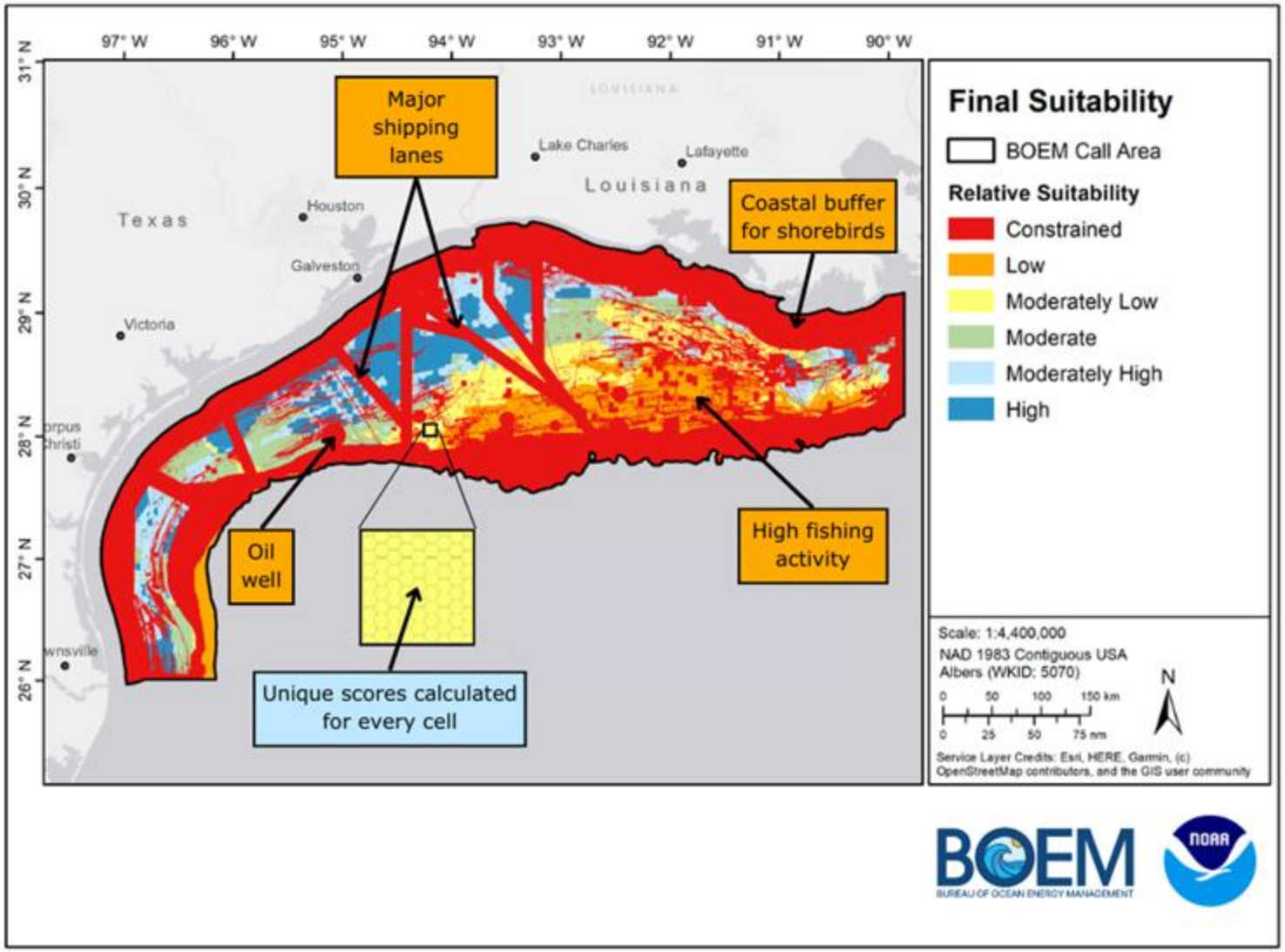
Gulf of Mexico 3
Call area siting
Wind energy area siting
Lease siting
Cable siting

Puerto Rico
Call area siting
Wind energy area siting
Lease siting
Cable siting

Map credit: NREL

BOEM Bureau of Ocean Energy Management

Our Goal: Identify Conflict, Find *Opportunity*



A **spatial suitability model** weights locations relative to each other based on given criteria.

How do we build the regional spatial model?

NORTHEAST OCEAN DATA
Maps and Data for Ocean Planning in the Northeastern United States

MarineCadastre.gov
An Ocean of Information
A joint BOEM and NOAA initiative providing authoritative data to meet the needs of the offshore energy and marine planning communities.

NOAA FISHERIES

BOEM
Bureau of Ocean Energy Management

NCCOS

State Agencies

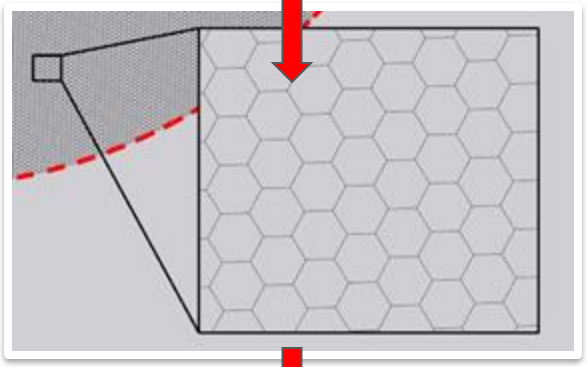
Submodels

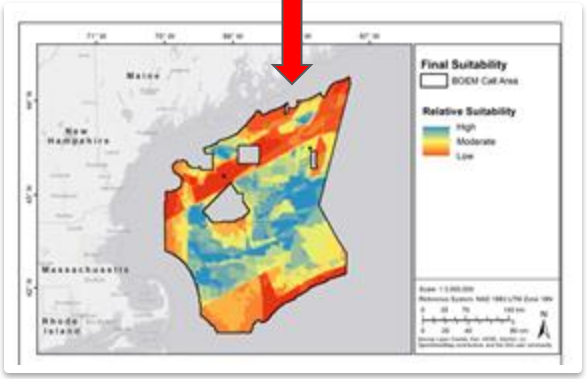
- Constraints
- National Security
- Industry
- Fisheries
- Wind
- Natural and Cultural Resources

Areas Eliminated

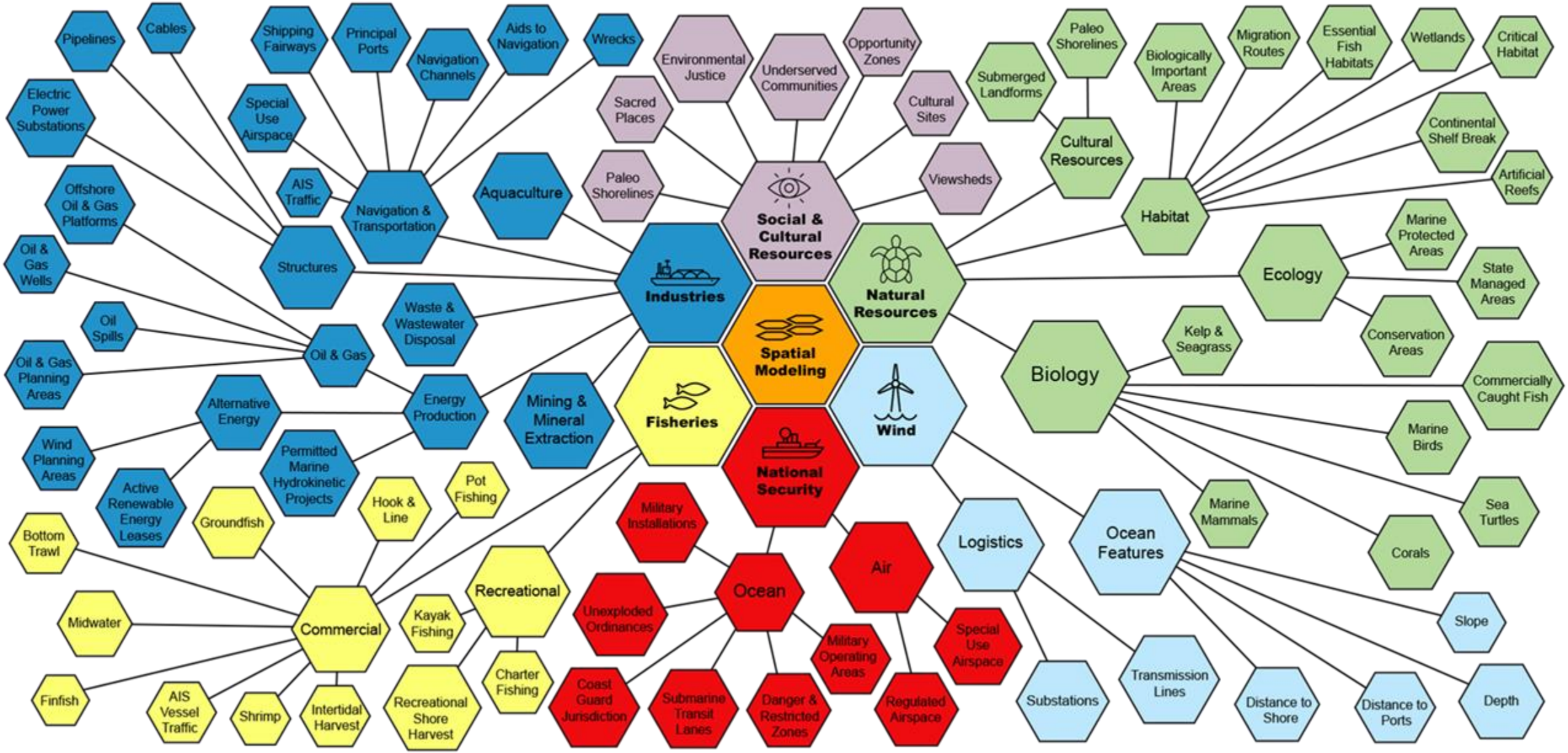
Geometric Mean Calculated

Cumulative Suitability

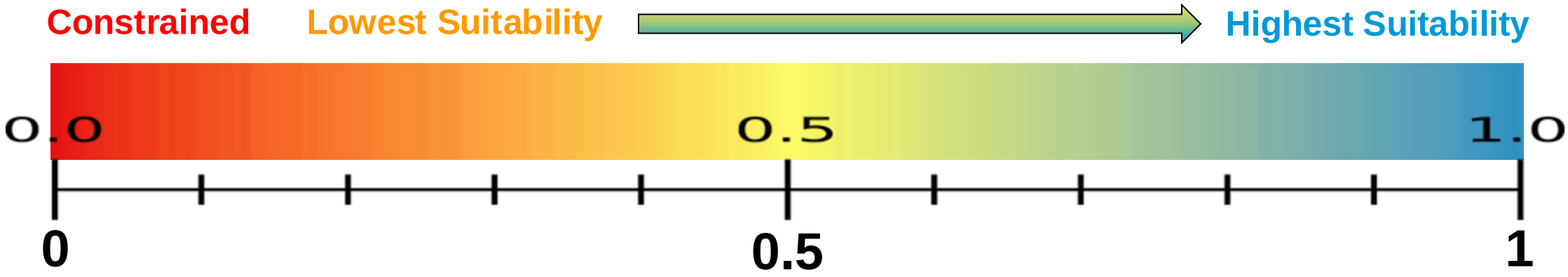


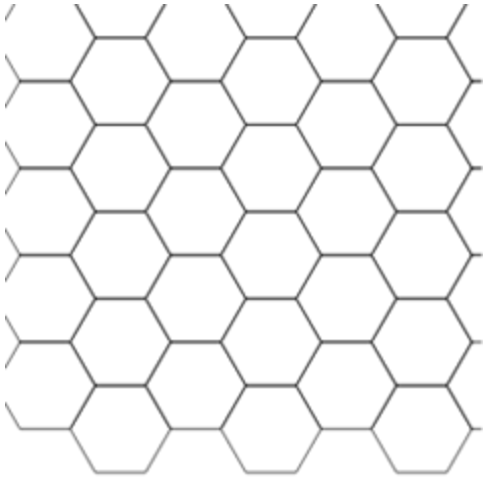


Ecosystem Models Require an Ocean of Data

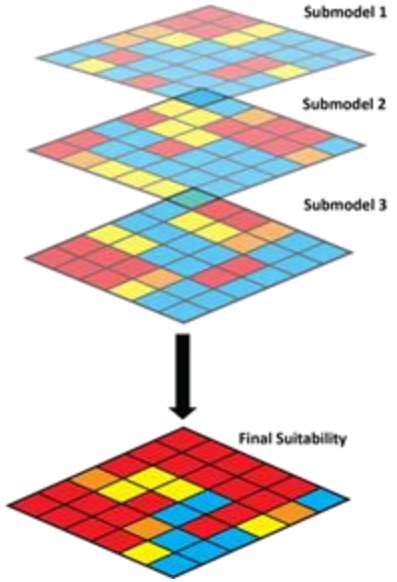


Scoring Data Layers





Scores are assigned to each grid cell for each separate data layer

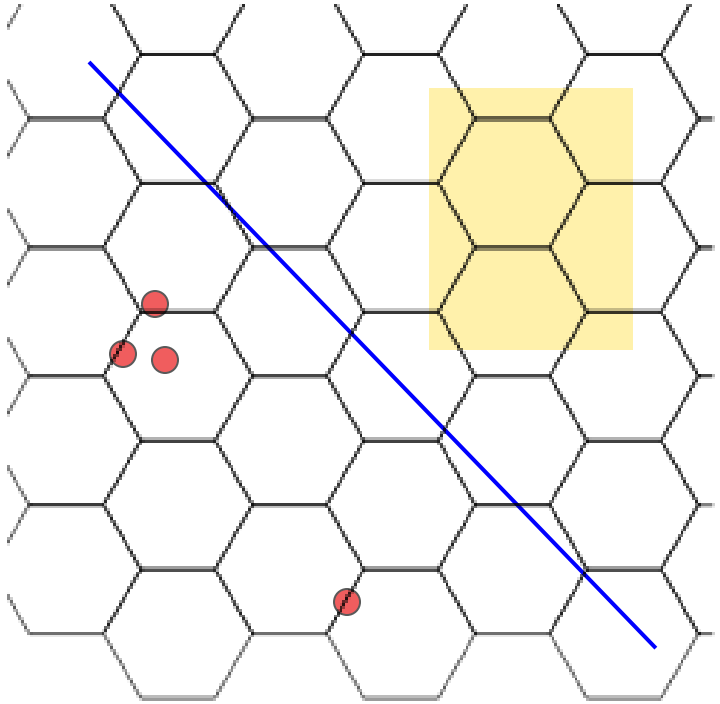


Cumulative scores for each submodel are calculated

The geometric mean of all submodels is calculated to determine final suitability

Scoring Data Layers

Categorical data

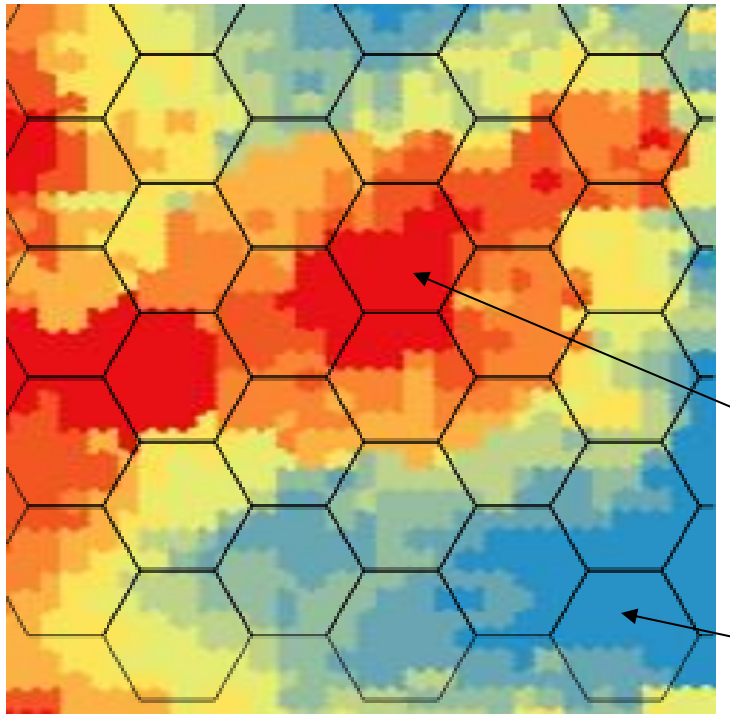


Examples:

- Deep-sea corals
- Cables
- Pipelines
- Wrecks
- Military restriction areas
- Hardbottom area
- Environmental buoys

Presence/Absence Data
0 - 1 score is assigned to grid cell if that data layer is present inside of cell or overlaps the cell

Continuous data



Examples:

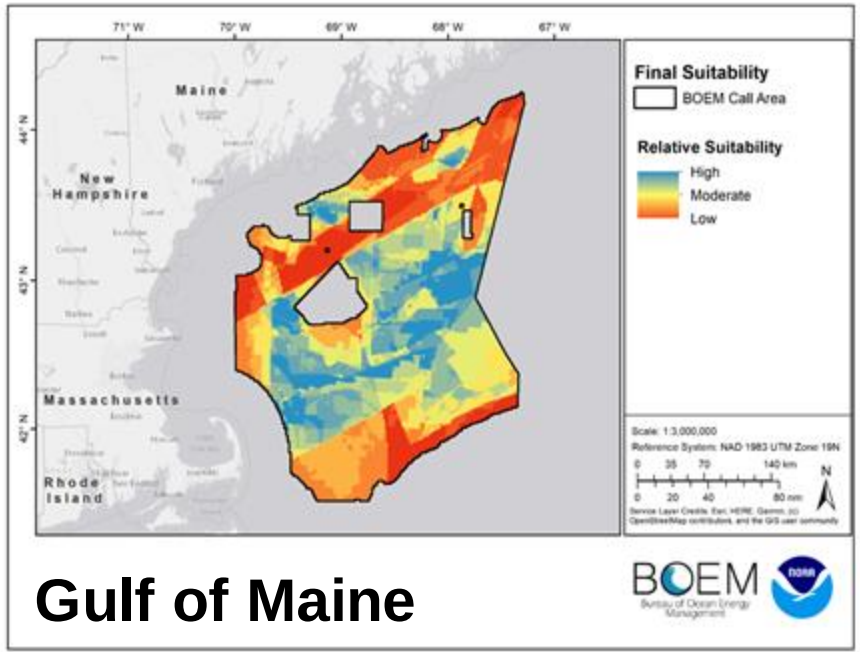
- Fishing effort
- Vessel traffic
- Protected resources

High fishing effort - score closer to 0

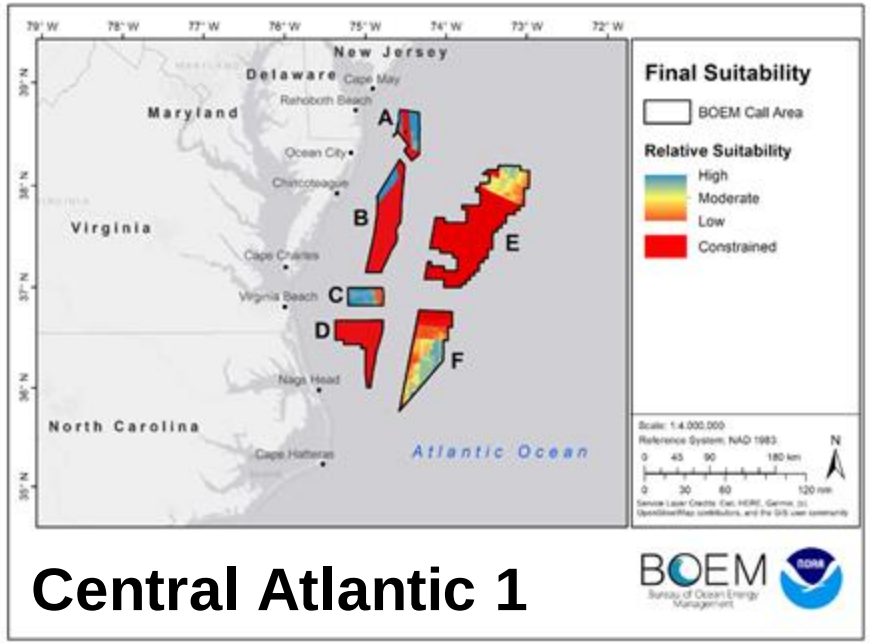
Lower fishing effort - score closer to 1

Raster Data - Changes over space and time
Data is rescaled to 0 - 1

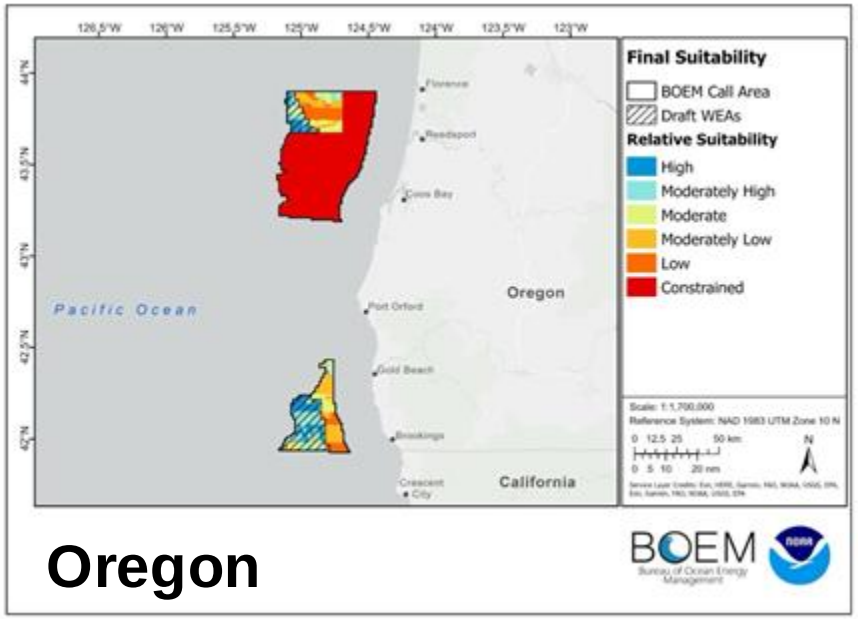
Regional Suitability modeling results



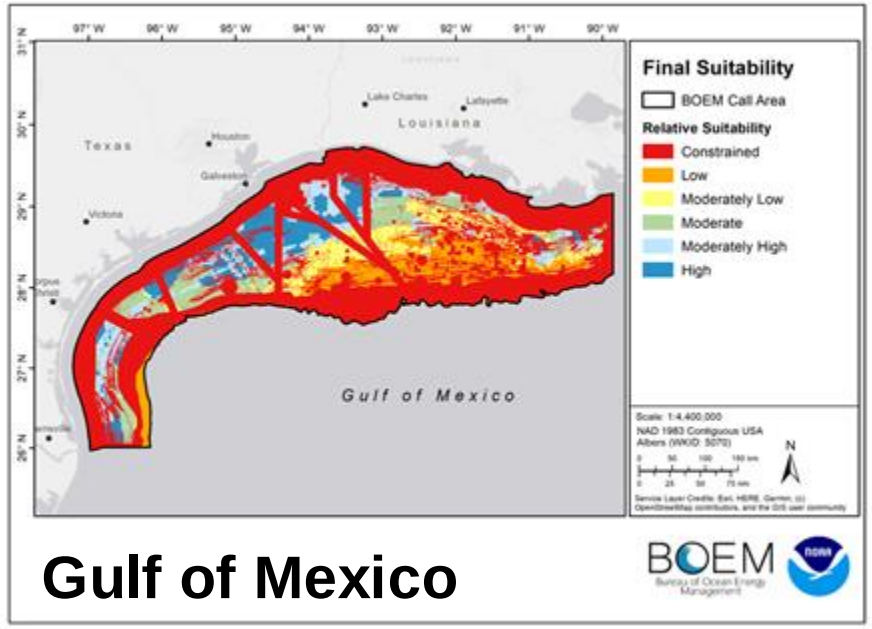
Gulf of Maine



Central Atlantic 1



Oregon



Gulf of Mexico

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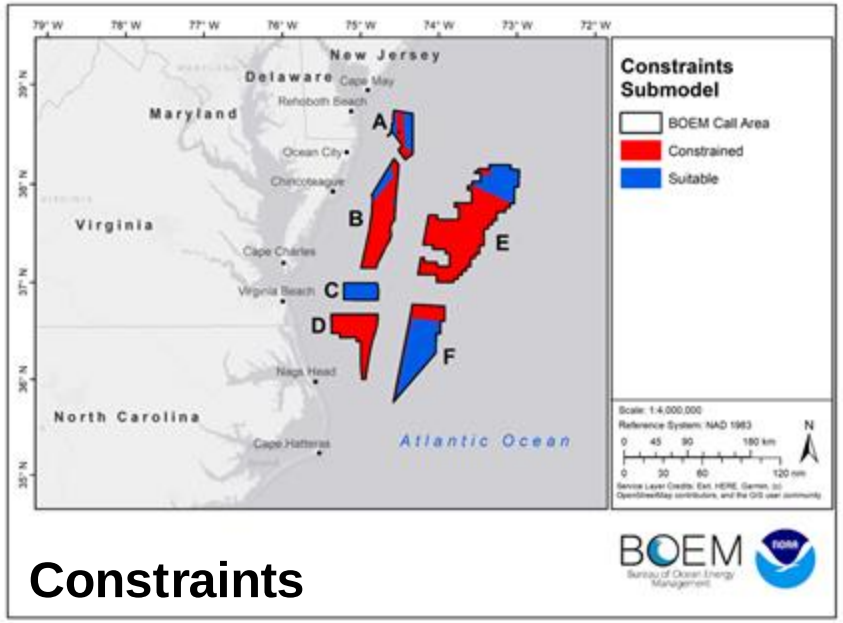
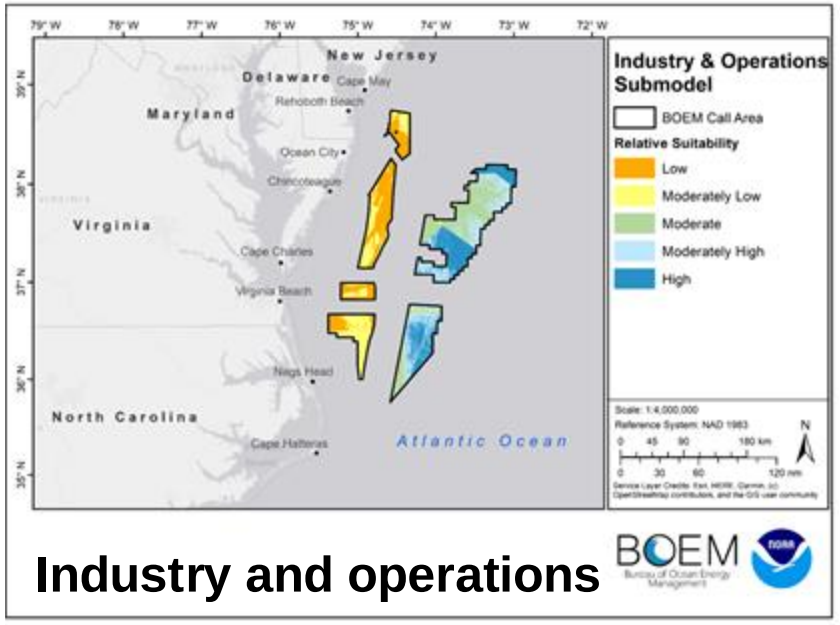
Central Atlantic round 1 Model Inputs

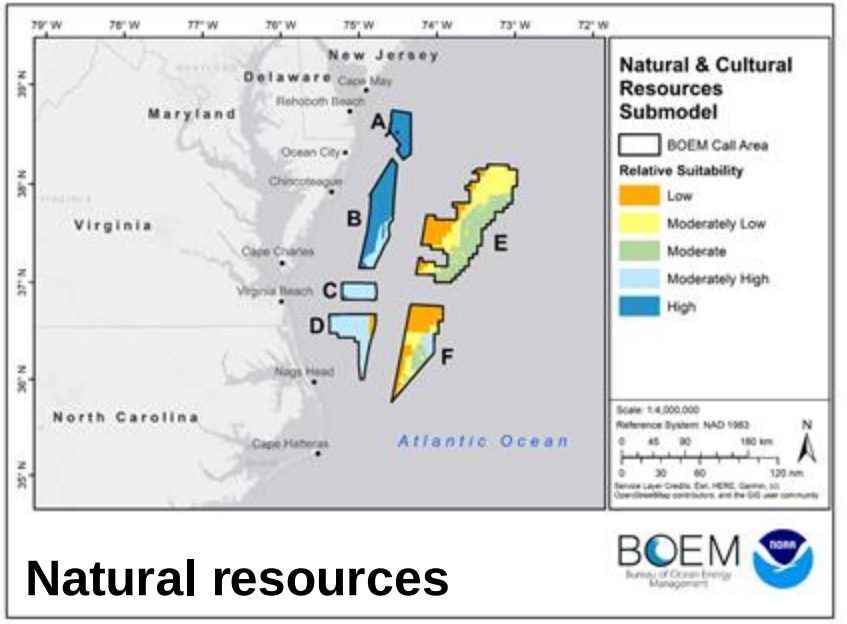
Natural & Cultural Resources
Protected Resource Division Combined Layer (31 species)
Habitat Combined Layer (4 habitats)
Black-Capped Petrel Annual Abundance
Highly Migratory Species (HMS) Essential Fish Habitat (EFH) Overfished/Prohibited Sharks Count (6 species)
Highly Migratory Species (HMS) Essential Fish Habitat (EFH) Target Species Count (6 species)
Fisheries
VMS All Fishing Types 2016 - 2021
Southeast Region Headboat Survey
Industry & Operations
NMFS Fisheries-Independent Surveys (13 total surveys)
AIS Vessel Traffic All Vessels 2015 - 2021
Wind
Distance to shore
Distance to inlet
Depth
Atlantic Wind Speed - Annual Average
National Security
Navy Assessment Areas (Priority Area 3 & areas that need further study)
NASA Assessment Areas (Major Risk Areas & areas that need further study)
Air Force Assessment Areas (Priority Areas 4-6 & areas that need further study)
Constraints
Deep Sea Coral and Sponge Observations
BWFA Exclusion Area
USCG Shipping Safety Fairways and Regulations
BOEM Proposed Fairway Extensions
DOD Area of No Seabed Disturbance
Navy Assessment Areas (Priority Areas 1-2)
NASA Assessment Areas (Extreme Risk Areas)
Air Force Assessment (Priority Areas 1-3)



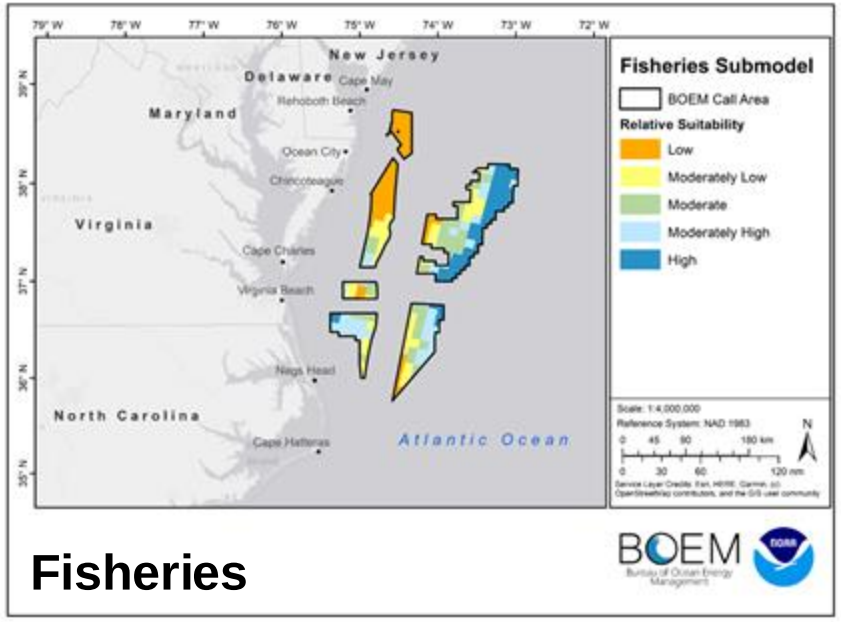
Constraints



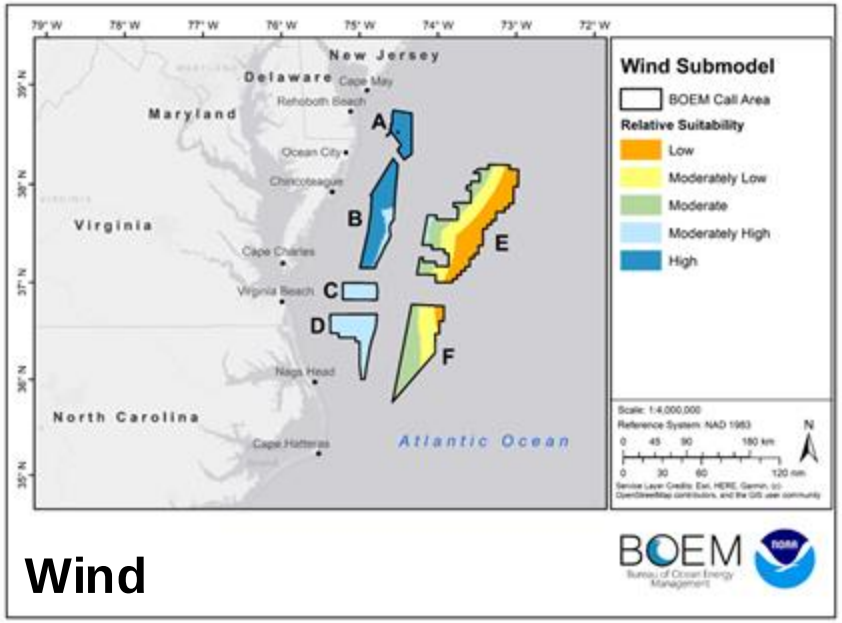
Industry and operations



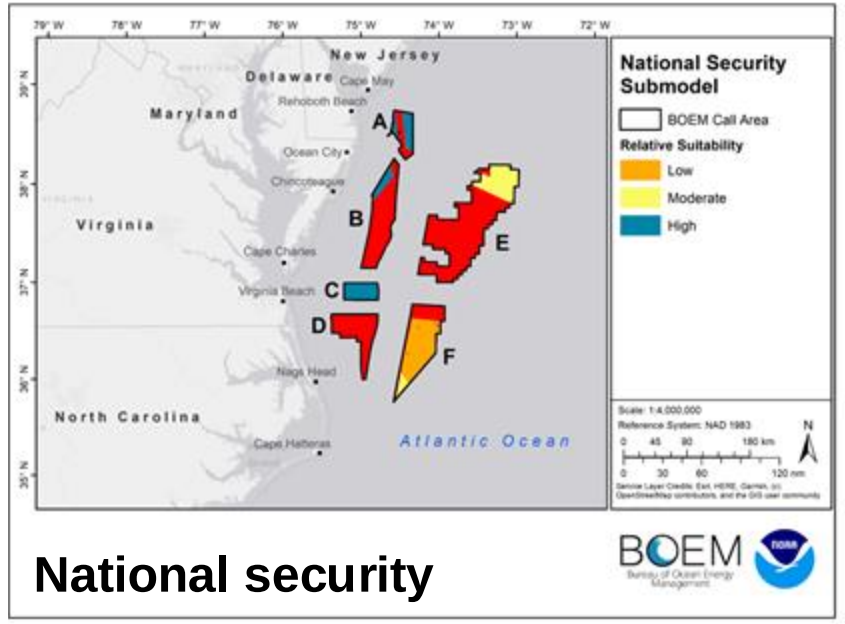
Natural resources



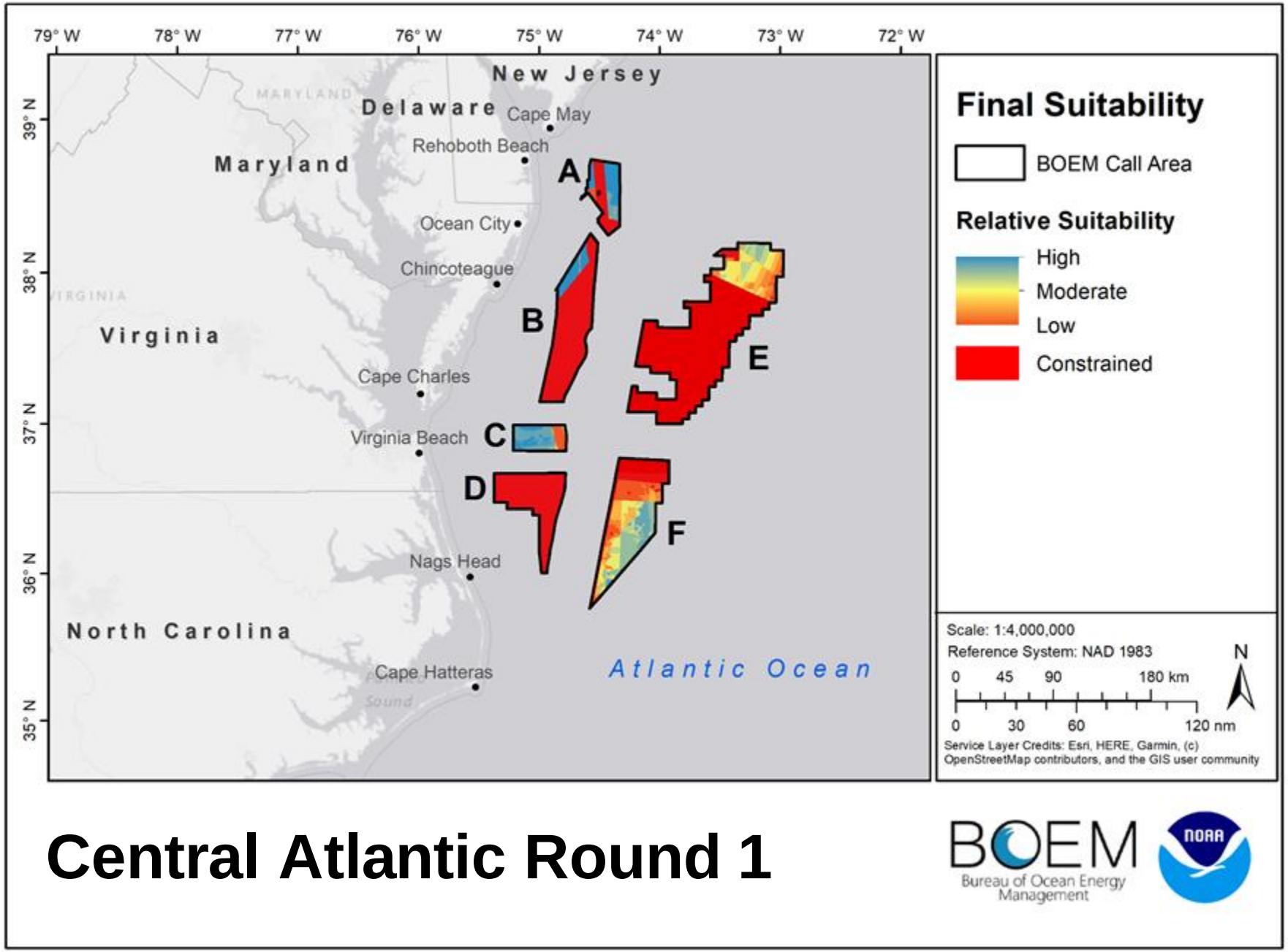
Fisheries



Wind



National security



Central Atlantic Round 1

BOEM Bureau of Ocean Energy Management

NOAA

National Centers for Coastal Ocean Science
National Ocean Service

Your OceanFuture Starts Here

Spatial science for ocean food, energy, commerce, and conservation

Thank you!
For more info:
James.Morris@noaa.gov

BOEM BUREAU OF OCEAN ENERGY MANAGEMENT

Known Resource and Use Concerns – Potential Solutions and Opportunities Discussion

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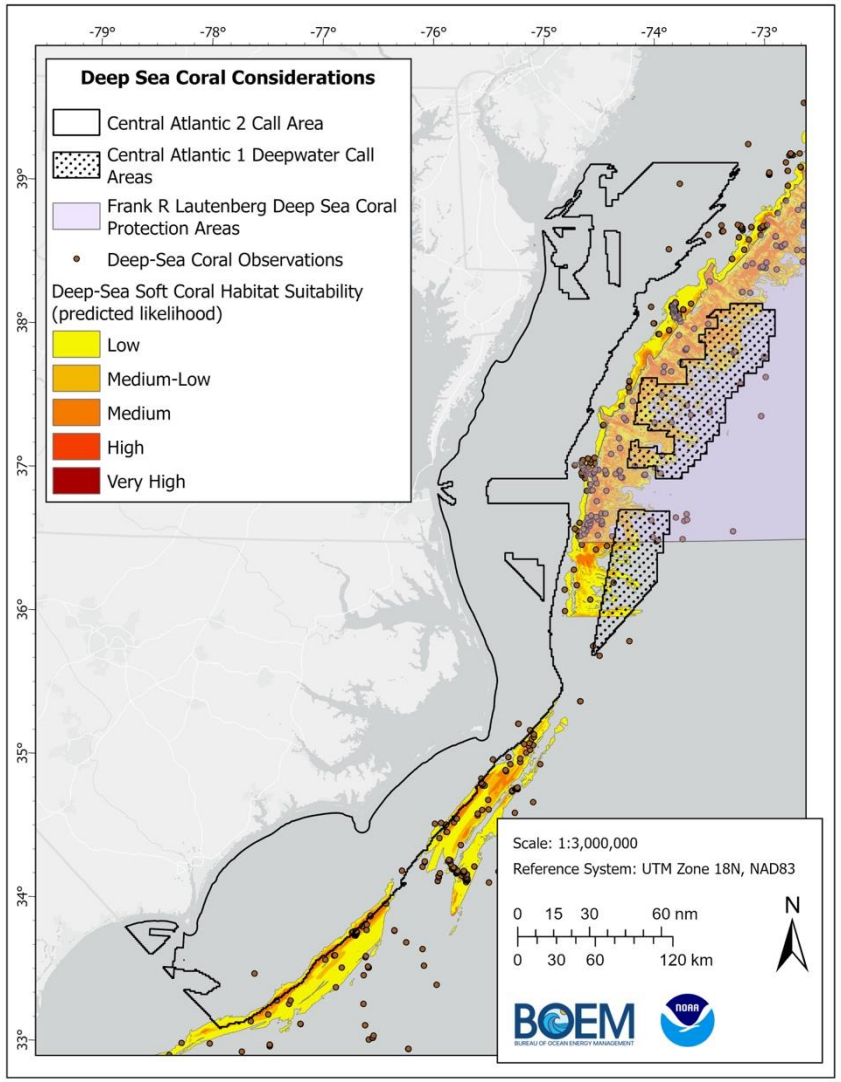
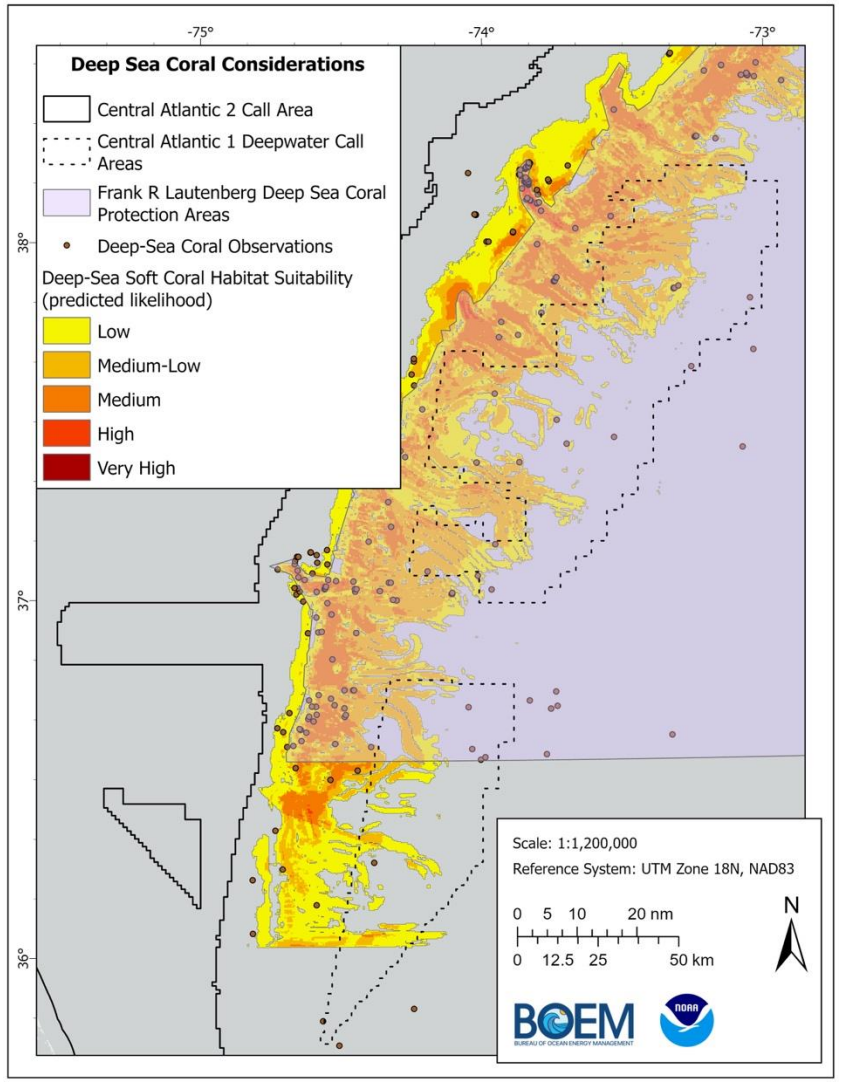
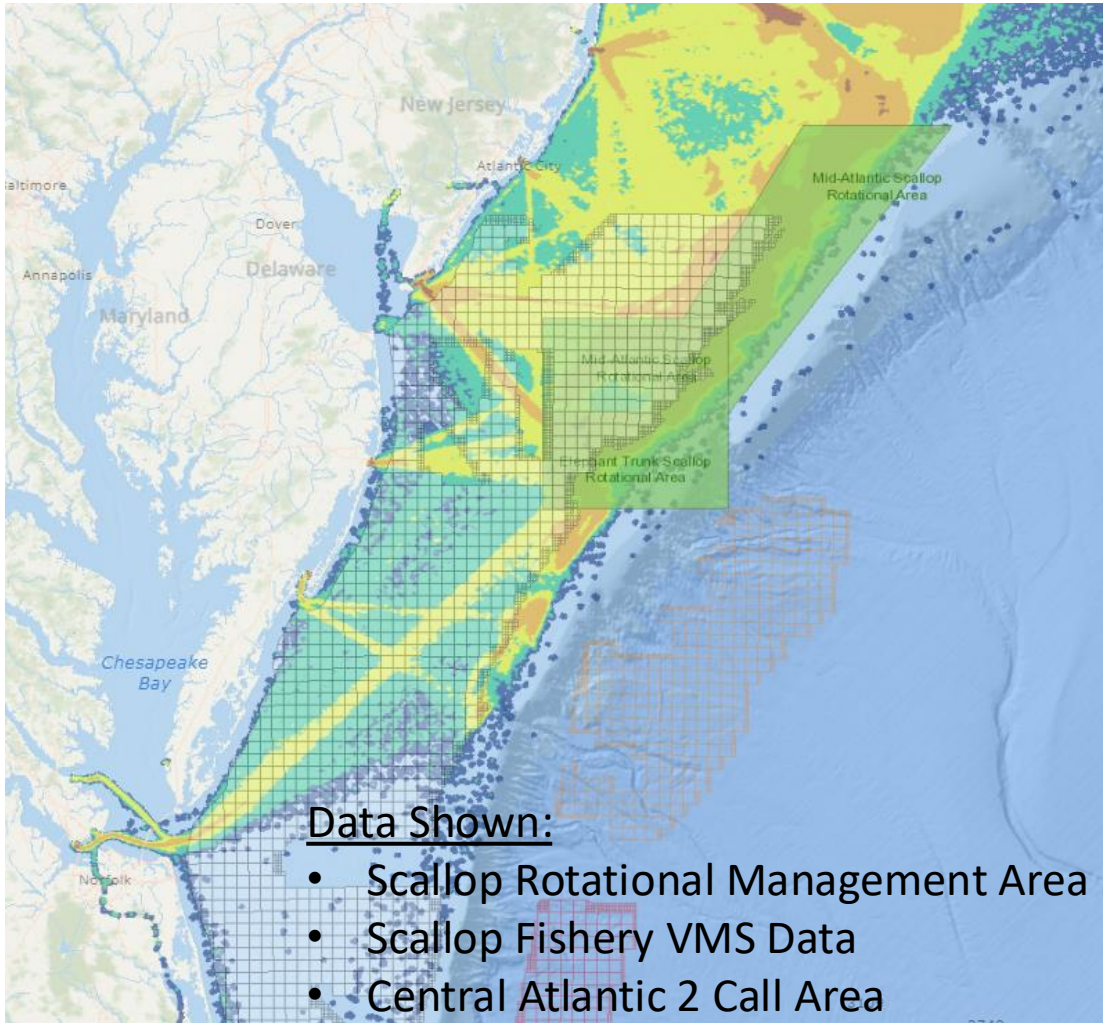
Example 1: Deep Sea Corals





Example 2: Scallop Fishery



Data Shown:

- Scallop Rotational Management Area
- Scallop Fishery VMS Data
- Central Atlantic 2 Call Area

Data Shown:

- Scallop Abundance Data (2015-2021)

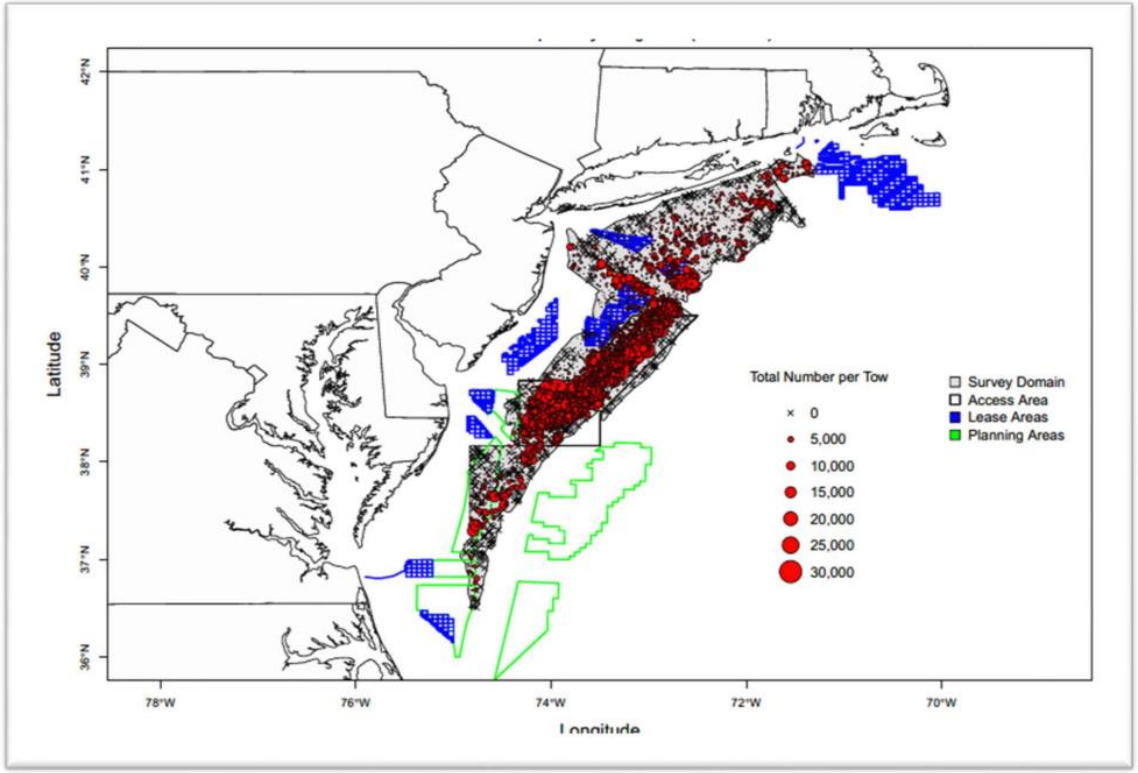
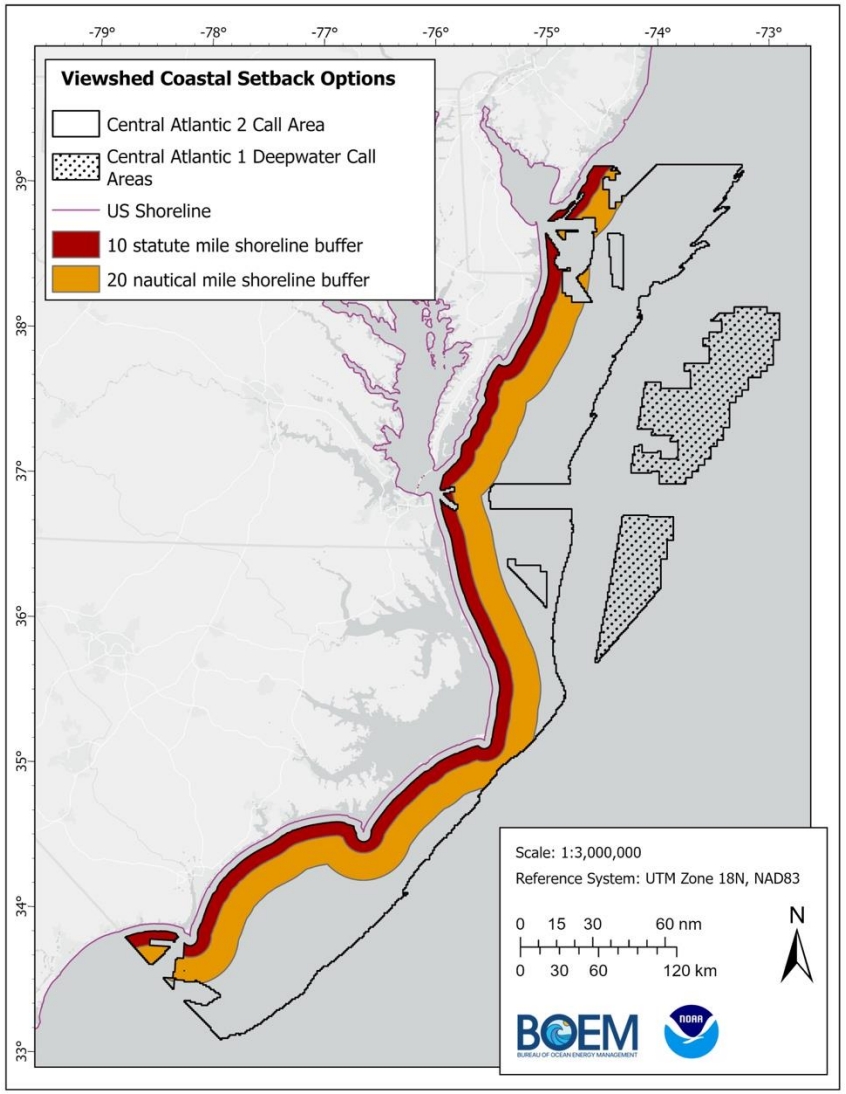


Figure 2: VIMS Cooperative Dredge Survey (2015-2021) w/ Central Atlantic Bight Call areas overlaid.
Source: Virginia Institute of Marine Sciences.

(Source: BOEM Comment Letter, BOEM-2022-0023-0033)

Example 3: Viewshed



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